Alignment update: The current FD alignment

D. Boehnlein (for B. Becker)

MINOS Collaboration meeting

FNAL

October 13, 2005

The previous alignment

- The previous FD alignment was known to have an easily correctable bug and easy to make improvement:
  - *Bug: The UgliDbiStrip table had about one percent of the strips in the wrong location by 2 cm.*
  - *Improvement: The initial seed position for the modules was known to be too narrow*

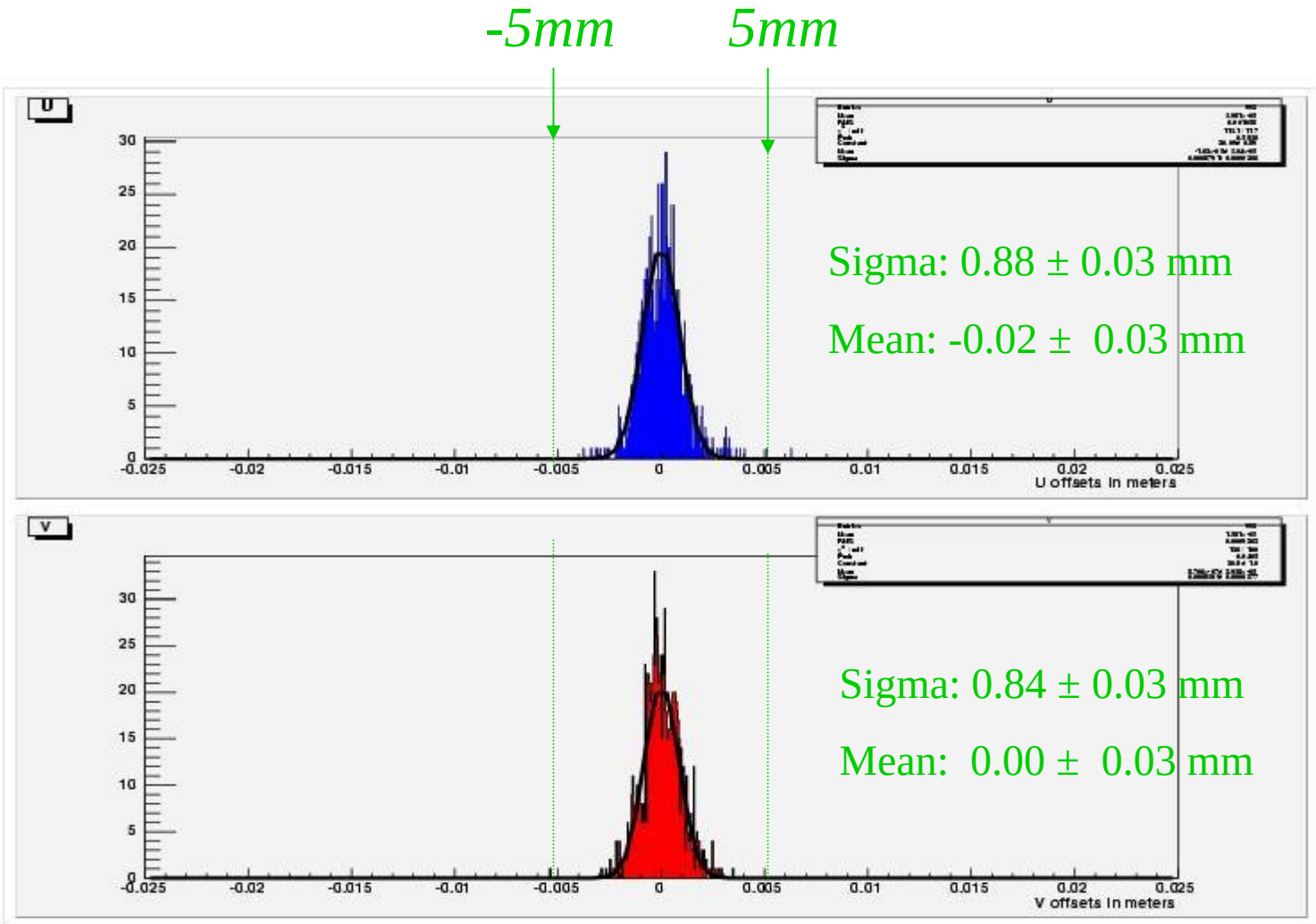
The current alignment

- The current alignment fixed the bug and made the single improvement to the initial module width.
- This was done with:
  - *Leon provided the fixed UgliDbiStrip table*
  - *Erik made an improved set of seed values for the initial module positions using the module mapper data*

The current alignment: II

- Besides these changes everything in the alignment was the same except R1.14 was used (the old software had a DB issue):
  - *Completed at the end of July*
  - *Had a ‘generation’ and verification runs as before*
  - *Converged quickly (second iteration) as before*

SM1: Verification



Distribution of module offsets with verification data set

Results and Conclusion

- Results:
  - *The new (current) alignment constants should be used as they fixed an outright bug in UgliDbiStrip.*
  - *The resulting verification runs give a module positional uncertainty of better then 1mm*
  - *In the ‘final results’ the planes are wider then before but maybe not as wide as they should be*
- Conclusions:
  - *This ‘alignment technology’ has reached its limit. Any improvements will need a more accurate geometry and reconstruction code that can use all (rotation) information to the fullest possible amount.*

Followup on Survey Data

- The Vulcan data are now in a MySQL database table in the offline_dev database on minos-db1.fnal.gov.
- The table name is FABVULCANMODULE(VLD).
- The fields are:
  - SEQNO
  - PLANE
  - MODULE
  - ALNERHOLE
  - VULCANX
  - VULCANY
  - VULCANZ